U.S. DEPARTMENT OF COMMERCE
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PB-261 776

Cherokee Lake, Jefferson, Hamblen, Grainger, and Hawkins Counties, Tennessee

National Eutrophication Survey, Las Vegas, Nev

Prepared for

Environmental Monitoring and Support Lab, Las Vegas

Sep 76

010063

PB 261 776

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EUTROPHICATION SURVEY

WORKING PAPER SERIES

CORVALLIS ENVIRONMENTAL RESEARCH LABORATORY - CORVALLIS, OREGON

and

ENVIRONMENTAL MONITORING & SUPPORT LABORATORY - LAS VEGAS, NEVADA

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

660-440

REPORT

ON

CHEROKEE LAKE
JEFFERSON, HAMBLEN, GRAINGER, AND HAWKINS COUNTIES
TENNESSEE

EPA REGION IV

WORKING PAPER No. 445

WITH THE COOPERATION OF THE

TENNESSEE DEPARTMENT OF PUBLIC HEALTH

AND THE

TENNESSEE NATIONAL GUARD

SEPTEMBER 1976

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.

4. TITLE AND SUBTITLE
Report on Cherokee Lake; Jefferson, Hamblen, Grainger, and Hawkins Counties, Tennessee

5. REPORT DATE
Prepared September 1976

6. PERFORMING ORGANIZATION CODE

7. AUTHOR(S)
Anonymous (National Eutrophication Survey Staff)

8. PERFORMING ORGANIZATION REPORT NO.
Working Paper No. 445

9. PERFORMING ORGANIZATION NAME AND ADDRESS
National Eutrophication Survey
U.S. Environmental Protection Agency
P.O. Box 15027
Las Vegas, NV 89114

10. PROGRAM ELEMENT NO.

11. CONTRACT/GRANT NO.

12. SPONSORING AGENCY NAME AND ADDRESS
Office of Research and Development
U.S. Environmental Protection Agency
401 M Street, S. W.
Washington, DC 20460

13. TYPE OF REPORT AND PERIOD COVERED
Final - 1973

14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES
Prepared in cooperation with the U.S. Environmental Protection Agency, Corvallis Environmental Research Laboratory, Eutrophication Survey Branch, Corvallis, OR 97330

16. ABSTRACT
Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
eutrophication lakes nutrients phosphorus nitrogen loading		05B 05C

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS *(This Report)*	21. NO. OF PAGES
Release unlimited		58
	20. SECURITY CLASS *(This page)*	22. PRICE
		4.50

Form 2220-1 (9-73)

1a

CONTENTS

	Page
Foreword	ii
List of Study Lakes - Tennessee	iv
Lake and Drainage Area Map	v
Sections	
I. Conclusions	1
II. Lake and Drainage Basin Characteristics	4
III. Lake Water Quality Summary	6
IV. Nutrient Loadings	12
V. Literature Reviewed	18
VI. Appendices	19

FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point source discharge reduction and nonpoint source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's freshwater lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by the U.S. Environmental Protection Agency and to augment plans implementation by the states.

ACKNOWLEDGMENTS

The staff of the National Eutrophication Survey (Office of Research and Development, U.S. Environmental Protection Agency) expresses sincere appreciation to the Tennessee Department of Public Health for professional involvement, to the Tennessee National Guard for conducting the tributary sampling phase of the Survey, and to those Tennessee wastewater treatment plant operators who provided effluent samples and flow data.

The staff of the Division of Water Quality Control, Tennessee Department of Public Health; the Division of Environmental Planning, Tennessee Valley Authority; and the Nashville District Corps of Engineers provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports and provided critiques most useful in the preparation of this Working Paper series.

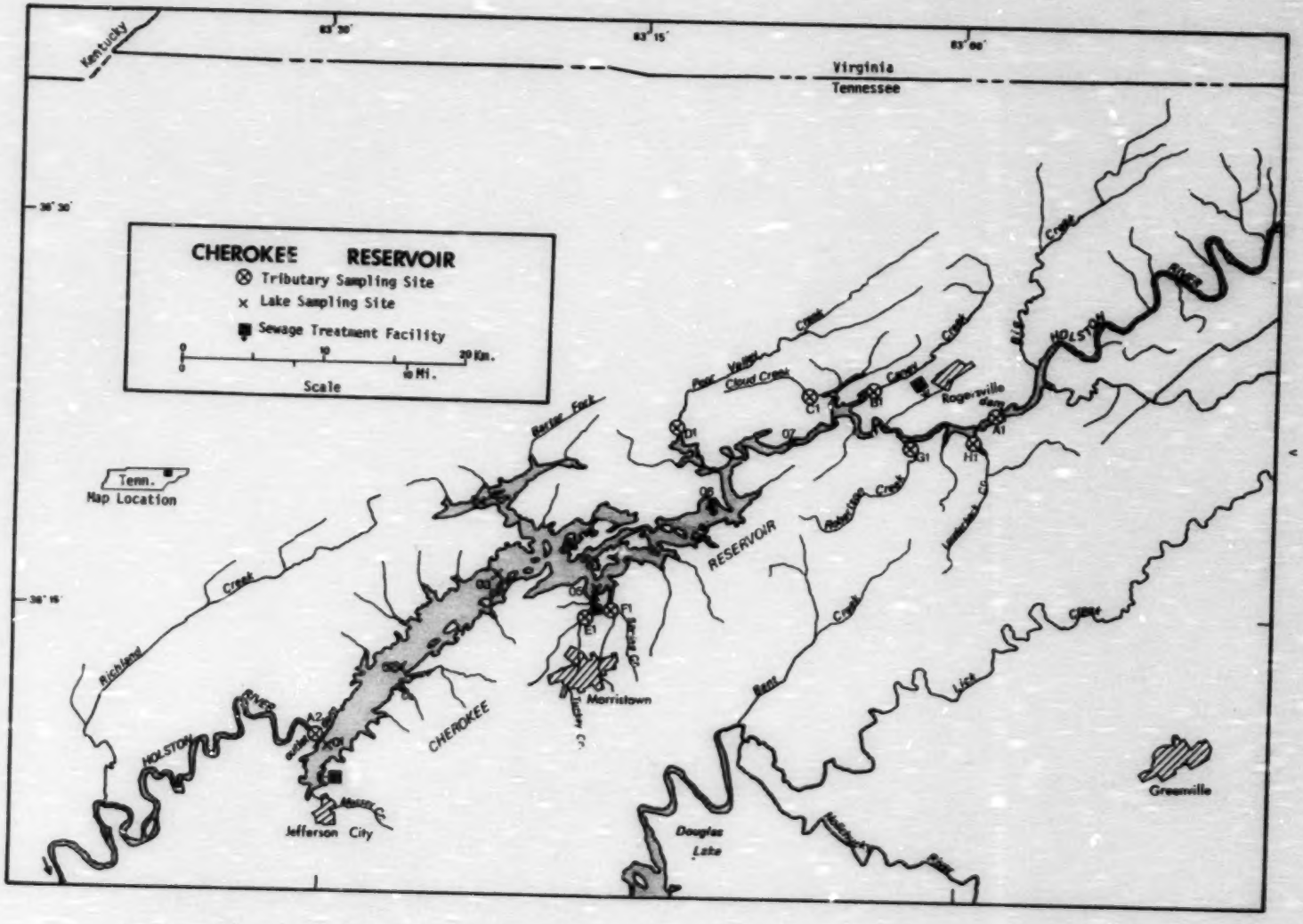
Major General William C. Smith, former Adjutant General of Tennessee, and Project Officer Colonel Wilburn C. Johnson, who directed the volunteer efforts of the Tennessee National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF TENNESSEE

LAKE NAME	COUNTY
Barkley	Stewart, Montgomery (Trigg, Lyon in KY)
Boone	Washington, Sullivan, Carter
Cheatham	Cheatham, Davidson
Cherokee	Jefferson, Hamblen, Grainger, Hawkins
Chickamauga	Hamilton, Rhea, Meigs, McMinn
Douglas	Sevier, Jefferson, Cocke
Fort Loudon	Loudon, Knox, Blount
Great Falls	White, Van Buren
Nickajack	Marion, Hamilton
Old Hickory	Sumner, Davidson, Wilson, Smith, Trousdale
Percy Priest	Davidson, Rutherford
Reelfoot	Obion
South Holston	Sullivan (Washington in VA)
Tims Ford	Moore, Franklin
Watts Bar	Rhea, Meigs, Cumberland, Roane, Loudon
Woods (Elk River)	Franklin, Coffee


CHEROKEE RESERVOIR
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
0 10 20 Km.
0 10 Mi.
Scale
Kentucky
Virginia
Tennessee
83° 30'
83° 15'
83° 00'
36° 30'
36° 15'
Tenn.
Map Location
Rogersville dam
Rogersville
Morristown
Jefferson City
Greeneville
Douglas Lake
RESERVOIR
CHEROKEE
HOLSTON RIVER
Richland Creek
Bent Creek
Lick Creek
Cloud Creek
Turkey Cr.
Muddy Cr.

REPORT ON CHEROKEE LAKE, TENNESSEE

STORET NO. 4707

I. CONCLUSIONS

A. Trophic Condition:*

Cherokee Lake is considered eutrophic, i.e., nutrient rich and highly productive, on the basis of field observations and analysis of Survey data. Whether such nutrient enrichment is to be considered beneficial or deleterious is determined by its actual or potential impact upon designated beneficial water uses of each lake.

Chlorophyll a levels ranged from 2.1 µg/l to 24.3 µg/l, with a mean of 12.2 µg/l. Water clarity was low, being turbid and greenish-brown in color. Of the 16 Tennessee lakes sampled in 1973, 7 had higher median total phosphorus, 1 had higher median inorganic nitrogen, and 6 had higher median orthophosphorus levels than Cherokee Lake. Dissolved oxygen concentrations were seriously depressed with depth during the summer sampling. According to Nicholas and Gordon (1972), Cherokee Lake has the worst dissolved oxygen regime of any Tennessee Valley Authority (TVA) reservoir due to the excessive influx of reduced carbon and nitrogen from the Holston River.

Survey limnologists reported a brown surface scum and much surface debris over portions of the lake during spring sampling.

*See Appendix E.

B. Rate-Limiting Nutrient:

Algal assay results indicate that Cherokee Lake was limited in primary production by available phosphorus levels. The ratios of available inorganic nitrogen to orthophosphorus (N/P ratios were 15/1 or greater on all sampling occasions) in sampled waters further indicate phosphorus limitation.

C. Nutrient Controllability:

1. Point sources -

The mean annual phosphorus load from point sources identified within 40 stream-km (25 miles) of Cherokee Lake was estimated to be 7.4% of the total lake phosphorus load. The city of Morristown contributed 5.0% of the total, Jefferson contributed 1.5%, and Rogersville, 0.9%.

The present overall phosphorus loading rate of 3.83 g $P/m^2/yr$ is about 3.5 times that proposed by Vollenweider (1975) as "eutrophic" for lakes with such volume and hydraulic retention time. The load includes other large discharges of nutrient rich domestic and industrial wastes which exist further upstream in the Holston River system and substantially influence the lake (Brye, 1970). Recent studies (EPA, 1972), which have identified these sources and quantified the waste treatment requirements for the Upper Holston River, indicate that reduction or elimination of point source loadings to Cherokee Lake would result in water quality improvement in the lake.

2. Nonpoint sources -

The mean annual phosphorus load not attributable to nearby point sources was about 92.6% of the total reaching the lake. The Holston River accounted for 87.8% of the total phosphorus load, and the ungaged drainage areas were estimated to have contributed 2.0%.

The high loading rate of the Holston River, as it enters Cherokee Lake, is largely due to unmeasured nutrient discharges from the Kingsport area upstream from Cherokee Lake, rather than nonpoint contributions. Waste sources from this region include the Kingsport Municipal Sewage Treatment Plant, the Holliston Mills plant, the Holston Army Ammunition Plant, the Mead Paper Company, and the Tennessee Eastman Corporation (EPA, 1972). These sources were not included in the National Eutrophication Survey (NES) sampling of Cherokee Lake due to their distance from the reservoir. Ernest Roberts (personal communication, 1976) of the Knoxville Tennessee Department of Public Health indicates that only approximately 4.0% of the total phosphorus load reaching the lake is from nonpoint sources; the TVA (1973) states that in terms of "stream-kilometers affected", the Holston River basin is the most seriously polluted in the Tennessee River Valley.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS

Lake and drainage basin characteristics are itemized below. Lake morphometry data and hydraulic retention times were provided by the Tennessee Valley Authority; tributary flow and drainage areas were provided by the Tennessee District Office of the U.S. Geological Survey (USGS). Outlet drainage area includes the lake surface area. Drainage area for tributary F(1), Spring Creek, was provided by the Tennessee Valley Authority. Mean hydraulic retention time was obtained by dividing the lake volume by the mean flow of the outlet. Tributary drainage areas plus the lake surface area do not equal the outlet drainage area probably because of differences in the pool elevations, used by the different sources in their calculations. Precipitation values are estimated by methods as outlined in NES Working Paper No. 175. A table of metric/English conversions is included as Appendix A.

A. Lake Morphometry:

1. Surface area: 122.62 km^2.
2. Mean depth: 14.9 meters.
3. Maximum depth: 49.7 meters.
4. Volume: 1,900.824 x 10^6 m^3.
5. Mean hydraulic retention time: 178 days.

B. Tributary and Outlet:
(See Appendix B for flow data)

1. Tributaries -

Name	Drainage area(km^2)	Mean flow (m^3/sec)
A(1) Holston River	7,795.9	107.76
B(1) Caney Creek	59.6	0.80
C(1) Cloud's Creek	45.1	0.59
D(1) Poor Valley Creek	139.6	1.82
E(1) Turkey Creek	49.5	0.70
F(1) Spring Creek	19.4	0.45
G(1) Robertson Creek	47.9	0.57
H(1) Louderback Creek	56.2	0.63
Minor tributaries and immediate drainage -	546.2	7.33
Totals	8,759.4	120.65
2. Outlet - A(2) Holston River	8,878.5	115.98

C. Precipitation:

1. Year of sampling: 154.6 cm.
2. Mean annual: 116.6 cm.

III. LAKE WATER QUALITY SUMMARY

Cherokee Lake was sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from seven stations on the lake and from a number of depths at each station (see map, page i). During each visit, depth-integrated samples were collected from each station for chlorophyll a analysis and phytoplankton identification and enumeration. During the first visit, two 18.9-liter depth-integrated samples were composited for algal assays. Maximum depths sampled were 40.2 meters at Station 1, 37.5 meters at Station 2, 34.4 meters at Station 3, 15.2 meters at Station 4, 29.0 meters at Station 5, 19.2 meters at Station 6, and 13.7 meters at Station 7. For a more detailed explanation of NES methods, see NES Working Paper No. 175.

The results obtained are presented in full in Appendix B and are summarized in III-A for waters at the surface and at the maximum depth for each site. Results of the phytoplankton counts and chlorophyll a determinations are included in III-B. Results of the limiting nutrient study are presented in III-C.

CHEROKEE LAKE
STORET CODE 4707

PHYSICAL AND CHEMICAL CHARACTERISTICS

PARAMETER	(5/24/73) S*** = 7 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)	(8/23/73) S*** = 7 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)	(10/27/73) S*** = 7 N*	RANGE	MEDIAN	MAX DEPTH RANGE (METERS)
TEMPERATURE (DEG CENT)												
0.-1.5 M DEPTH	14	18.4- 58.0	30.3	0.0- 1.2	8	26.4- 70.0	50.0	0.0- 1.5	14	19.8- 60.0	28.9	0.0- 1.5
MAX DEPTH**	7	12.1- 17.9	13.2	13.7- 38.1	7	16.2- 25.8	20.1	10.1- 40.2	7	19.7- 21.2	20.0	6.1- 33.8
DISSOLVED OXYGEN (MG/L)												
0.-1.5 M DEPTH	7	7.6- 11.8	9.3	1.2- 1.2	7	6.4- 9.0	7.0	0.0- 0.0	7	4.4- 9.8	6.6	1.5- 1.5
MAX DEPTH**	7	2.8- 4.6	4.1	13.7- 38.1	7	0.0- 4.6	0.1	10.1- 40.2	7	0.8- 7.8	4.4	6.1- 33.8
CONDUCTIVITY (UMHOS)												
0.-1.5 M DEPTH	14	260.- 298.	273.	0.0- 1.2	8	231.- 288.	243.	0.0- 1.5	14	230.- 295.	246.	0.0- 1.5
MAX DEPTH**	7	260.- 300.	285.	13.7- 38.1	7	232.- 280.	251.	10.1- 40.2	7	244.- 302.	258.	6.1- 33.8
PH (STANDARD UNITS)												
0.-1.5 M DEPTH	14	8.3- 9.0	8.8	0.0- 1.2	7	8.0- 9.0	8.7	0.0- 0.0	14	7.5- 8.8	7.9	0.0- 1.5
MAX DEPTH**	7	7.5- 7.7	7.6	13.7- 38.1	7	7.0- 8.4	7.3	10.1- 40.2	7	7.3- 8.2	7.5	6.1- 33.8
TOTAL ALKALINITY (MG/L)												
0.-1.5 M DEPTH	14	85.- 107.	92.	0.0- 1.2	7	75.- 88.	76.	0.0- 0.0	14	77.- 95.	84.	0.0- 1.5
MAX DEPTH**	7	92.- 127.	98.	13.7- 38.1	7	78.- 123.	114.	10.1- 40.2	7	82.- 95.	88.	6.1- 33.8
TOTAL P (MG/L)												
0.-1.5 M DEPTH	14	0.025-0.114	0.045	0.0- 1.2	7	0.013-0.097	0.024	0.0- 0.0	14	0.025-0.197	0.063	0.0- 1.5
MAX DEPTH**	7	0.032-0.152	0.057	13.7- 38.1	7	0.029-0.477	0.226	10.1- 40.2	7	0.031-0.133	0.070	6.1- 33.8
DISSOLVED ORTHO P (MG/L)												
0.-1.5 M DEPTH	14	0.004-0.021	0.010	0.0- 1.2	7	0.006-0.033	0.014	0.0- 0.0	14	0.012-0.056	0.023	0.0- 1.5
MAX DEPTH**	7	0.008-0.127	0.037	13.7- 38.1	7	0.015-0.319	0.110	10.1- 40.2	7	0.017-0.059	0.029	6.1- 33.8
NO2+NO3 (MG/L)												
0.-1.5 M DEPTH	14	0.530-0.788	0.630	0.0- 1.2	7	0.060-0.800	0.240	0.0- 0.0	14	0.480-0.910	0.595	0.0- 1.5
MAX DEPTH**	7	0.670-1.290	0.820	13.7- 38.1	7	0.060-0.830	0.110	10.1- 40.2	7	0.220-0.880	0.650	6.1- 33.8
AMMONIA (MG/L)												
0.-1.5 M DEPTH	14	0.030-0.110	0.080	0.0- 1.2	7	0.070-0.130	0.100	0.0- 0.0	14	0.040-0.130	0.050	0.0- 1.5
MAX DEPTH**	7	0.030-0.660	0.220	13.7- 38.1	7	0.090-2.110	1.400	10.1- 40.2	7	0.060-0.540	0.100	6.1- 33.8
KJELDAHL N (MG/L)												
0.-1.5 M DEPTH	14	0.400-0.800	0.650	0.0- 1.2	7	0.500-0.900	0.800	0.0- 0.0	14	0.300-1.400	0.600	0.0- 1.5
MAX DEPTH**	7	0.200-1.000	0.400	13.7- 38.1	7	0.400-3.100	1.900	10.1- 40.2	7	0.400-1.000	0.600	6.1- 33.8
SECCHI DISC (METERS)	0	***** *****	*****		0	***** *****	*****		0	***** *****	*****	

* N = NO. OF SAMPLES
** MAXIMUM DEPTH SAMPLED AT EACH SITE
*** S = NO. OF SITES SAMPLED ON THIS DATE

B. Biological Characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
05/24/73	1. Flagellates	1,486
	2. Melosira	1,340
	3. Cyclotella	801
	4. Scenedesmus	671
	5. Nitzschia	248
	Other genera	469
	Total	5,015
08/23/73	1. Raphidiopsis	28,561
	2. Cyclotella	1,219
	3. Flagellates	1,045
	4. Tetraedron	435
	5. Synedra	305
	Other genera	1,045
	Total	32,610
10/27/73	1. Flagellates	2,162
	2. Melosira	713
	3. Stephanodiscus	356
	4. Mesostigma	143
	5. Dactylococcopsis	95
	Other genera	408
	Total	3,877

2. Chlorophyll a

Sampling Date	Station Number	Chlorophyll a (µg/l)
05/24/73	1	5.5
	2	15.6
	3	7.8
	4	5.0
	5	18.2
	6	17.3
	7	20.1
08/23/73	1	11.4
	2	12.1
	3	13.8
	4	9.9
	5	16.9
	6	14.7
	7	16.4
10/27/73	1	2.1
	2	7.3
	3	4.6
	4	13.2
	5	8.3
	6	24.3
	7	10.9

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc.(mg/l)	Inorganic N Conc.(mg/l)	Maximum Yield (mg/l-dry wt.)
Stations 1, 2 & 3:			
Control	0.008	0.930	0.1
0.05 P	0.058	0.930	10.6
0.05 P + 1.0 N	0.058	1.930	15.0
1.00 N	0.008	1.930	0.2
Stations 4, 5, 6 & 7:			
Control	0.016	0.906	4.3
0.05 P	0.066	0.906	7.6
0.05 P + 1.0 N	0.066	1.906	15.9
1.00 N	0.016	1.906	4.1

2. Discussion -

The control yields of the assay alga, Selenastrum capricornutum, indicate that the potential for primary production in Cherokee Lake was low at the time of sampling at Stations 1, 2, and 3, and was moderately high at Stations 4, 5, 6, and 7 (probably due to the proximity of Station 5 to the Morristown sewage treatment discharge point). The increase in yield produced by the addition of orthophosphate spikes indicates phosphorus limitation. The simultaneous addition of nitrogen and phosphorus produced substantial increases in yield over the addition of phosphorus alone. No growth response accompanied spikes of nitrogen alone.

An overall inorganic nitrogen to orthophosphorus ratio of 40:1 prevailed in the lake on the assay sampling date, substantiating the assay indication of phosphorus limitation (a minimum N:P ratio of 14:1 is necessary for phosphorus limitation to occur). On subsequent sampling dates in August and October, the overall N:P ratios were 15:1 and 26:1, respectively, suggesting the maintenance of a phosphorus limited situation. Although August N:P ratios at sites 04 and 05 were indicative of nitrogen limitation if computed over the entire water column, the photic zone probably remained phosphorus limited in both cases.

IV. NUTRIENT LOADINGS
(See Appendix D for data)

For the determination of nutrient loadings, the Tennessee National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff month of February when two samples were collected. Sampling was begun in April 1973, and was completed in March 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Tennessee District Office of the USGS for the tributary sites nearest the lake.

In this report, nutrient loads for all sampled tributaries were determined by using a modification of a USGS computer program for calculating stream loadings. Nutrient loads indicated for tributaries are those measured minus known point source loads, if any.

Nutrient loadings for unsampled "minor tributaries and immediate drainage" ("ZZ" of USGS) were estimated by using the means of the nutrient loads, in $kg/km^2/yr$, for Caney Creek, Cloud's Creek, Poor Valley Creek, Robertson Creek, and Louderback Creek at Stations B(1), C(1), D(1), G(1), and H(1), and by multiplying the means by the appropriate area in km^2.

The operators of the Jefferson and Morristown wastewater treatment plants provided monthly effluent samples and corresponding flow data. Nutrient loads for the city of Rogersville wastewater treatment plant were estimated at 1.134 kg P and 3.401 kg N/capita/yr.

A. Waste Sources:

1. Known municipal -

Name	Pop. Served*	Treatment*	Mean Flow ($m^3/d \times 10^3$)	Receiving Water*
Jefferson	6,159	Trickling filter	2.056	Mossey Creek embayment at Cherokee Reservoir
Rogersville	3,744	Activated sludge	1.417**	Crockett Creek
Morristown	19,000	Primary	8.826	Turkey Creek

2. Known industrial - See discussion, page 3.

*Tennessee Department of Public Health (manuscript).
**Estimated at 0.3785 m^3/capita/day.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/yr	% of total
a. Tributaries (nonpoint load) -		
A(1) Holston River	412,485	87.8
B(1) Caney Creek	1,035	0.2
C(1) Cloud's Creek	1,035	0.2
D(1) Poor Valley Creek	1,145	0.2
E(1) Turkey Creek	4,830	1.0
F(1) Spring Creek	1,180	0.3
G(1) Robertson Creek	555	0.1
H(1) Louderback Creek	1,370	0.3
b. Minor tributaries and immediate drainage (nonpoint load) -	9,285	2.0
c. Known municipal STP's -		
Jefferson	6,835	1.5
Rogersville	4,245	0.9
Morristown	23,625	5.0
d. Septic tanks* -	30	<0.1
e. Known industrial - See discussion, page 3.		
f. Direct precipitation** -	2,145	0.5
Totals	469,800	100.0
2. Outlet - A(2) Holston River	174,735	
3. Net annual P accumulation -	295,065	

*Estimate based on 100 lakeside residences and 4 parks.
**Estimated (see NES Working Paper No. 175).

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source		kg N/yr	% of total
a.	Tributaries (nonpoint load) -		
	A(1) Holston River	6,074,340	89.0
	B(1) Caney Creek	28,440	0.4
	C(1) Cloud's Creek	25,435	0.4
	D(1) Poor Valley Creek	59,580	0.9
	E(1) Turkey Creek	55,880	0.8
	F(1) Spring Creek	34,075	0.5
	G(1) Robertson Creek	28,350	0.4
	H(1) Louderback Creek	25,380	0.4
b.	Minor tributaries and immediate drainage (nonpoint load) -	274,190	4.0
c.	Known municipal STP's -		
	Jefferson	9,100	0.1
	Rogersville	12,735	0.2
	Morristown	65,350	1.0
d.	Septic tanks* -	1,205	<0.1
e.	Known industrial - See discussion, page 3.		
f.	Direct precipitation** -	132,380	1.9
	Totals	6,826,440	100.0

2. Outlet - A(2) Holston River 6,402,390

3. Net annual N accumulation - 424,050

*Estimate base on 100 lakeside residences and 4 parks.
**Estimated (see NES Working Paper No. 175).

D. Mean Annual Nonpoint Nutrient Export by Subdrainage Area:

Tributary	kg P/km^2/yr	kg N/km^2/yr
A(1) Holston River	53	779
B(1) Caney Creek	17	477
C(1) Cloud's Creek	23	564
D(1) Poor Valley Creek	8	427
E(1) Turkey Creek	98	1,129
F(1) Spring Creek	61	1,756
G(1) Robertson Creek	12	592
H(1) Louderback Creek	24	452

E. Yearly Loadings:

In the following table, the existing phosphorus loadings are compared to those proposed by Vollenweider (1975). Essentially, his "eutrophic" loading is that at which the receiving waters would become eutrophic or remain eutrophic; his "oligotrophic" loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A "mesotrophic" loading would be considered one between eutrophic and oligotrophic.

Note that Vollenweider's model may not apply to lakes with short hydraulic retention times or in which light penetration is severely restricted by high concentrations of suspended solids in the surface waters.

	Total Yearly Phosphorus Loading ($g/m^2/yr$)
Estimated loading for Cherokee Lake	3.83
Vollenweider's "eutrophic" loading	1.06
Vollenweider's "oligotrophic" loading	0.53

V. LITERATURE REVIEWED

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Nicholas, William R. and John A. Gordon. 1972. Effects of Impoundments on Water Quality. Observations of Several Mechanisms of DO Depletion. Presented at the 1972 ASCE Annual and National Environmental Engineering Meeting, Houston, Texas, October 16-22, 1972.

Roberts, Ernest H. 1976. Personal communication (review of preliminary reports, point sources to Cherokee Lake). Tennessee Department of Public Health, Division of Water Quality Control, Knoxville, Tennessee.

Tennessee Department of Public Health (manuscript). Water Quality Management Plan for the Holston River Basin. October 1972. Division of Water Quality Control.

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U.S. Environmental Protection Agency. 1972. Water Quality and Waste Treatment Requirements on the Upper Holston River, Kingsport, Tennessee to Cherokee Reservoir. EPA Region IV, Surveillance and Analysis Division, Athens, Georgia.

U.S. Environmental Protection Agency. 1975. National Eutrophication Survey Methods 1973-1976. Working Paper No. 175. National Environmental Research Center, Las Vegas, Nevada, and Pacific Northwest Environmental Research Laboratory, Corvallis, Oregon.

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VI. APPENDICES

APPENDIX A

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX B

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR TENNESSEE 09/13/76

LAKE CODE 4707 CHEROKEE RESERVOIR

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 8878.5

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
4707A1	7795.9	121.76	160.27	157.44	131.39	102.79	82.12	77.59	89.20	83.82	82.12	86.65	121.48	107.76
4707A2	8878.5	125.44	84.67	75.89	50.97	78.44	103.92	119.78	163.39	151.21	106.75	147.81	180.10	115.98
4707B1	59.6	1.25	1.89	2.05	1.20	0.67	0.47	0.47	0.23	0.12	0.17	0.33	0.82	0.80
4707C1	45.1	0.946	1.430	1.552	0.906	0.507	0.250	0.250	0.172	0.087	0.126	0.253	0.600	0.585
4707D1	139.6	2.92	4.42	4.81	2.81	1.57	0.78	0.78	0.54	0.27	0.40	0.79	1.86	1.82
4707E1	49.5	0.93	2.11	1.48	1.20	0.58	0.29	0.27	0.23	0.12	0.16	0.30	0.83	0.70
4707F1	32.1	0.600	1.371	0.963	0.779	0.379	0.188	0.174	0.149	0.076	0.106	0.195	0.541	0.454
4707G1	47.9	0.750	1.651	1.226	0.968	0.535	0.246	0.241	0.194	0.094	0.142	0.227	0.677	0.573
4707H1	56.2	0.88	1.41	1.44	1.14	0.63	0.29	0.28	0.23	0.11	0.17	0.26	0.79	0.63
4707ZZ	533.5	10.19	16.42	16.71	13.20	7.28	3.34	3.28	2.64	1.29	1.93	3.06	9.20	7.33

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 8878.5
SUM OF SUB-DRAINAGE AREAS = 8759.4

TOTAL FLOW IN = 1452.45
TOTAL FLOW OUT = 1388.37

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4707A1	4	73	165.654	15	101.091				
	5	73	208.978	16	160.273				
	6	73	133.089	20	98.897				
	7	73	109.586	23	111.568				
	8	73	133.089	24	126.859				
	9	73	87.782	21	74.473				
	10	73	84.101	18	52.952				
	11	73	107.887	21	46.440				
	12	73	202.465	19	70.792				
	1	74	387.941	18	228.517				
	2	74	278.921	8	254.285	22	297.327		
	3	74	217.190	8	156.309	22	614.476		
4707A2	4	73	74.756	15	5.239				
	5	73	178.694	16	95.145				
	6	73	200.766	20	116.949				
	7	73	167.636	23	250.038				
	8	73	257.966	24	297.044				
	9	73	191.988	21	190.572				
	10	73	129.691	18	173.016				
	11	73	89.198	21	75.889				
	12	73	235.313	19	282.319				
	1	74	498.376	18	555.010				
	2	74	311.485	8	268.444	22	368.119		
	3	74	136.487	8	126.293	22	62.014		

TRIBUTARY FLOW INFORMATION FOR TENNESSEE 09/13/76

LAKE CODE 4707 CHEROKEE RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4707B1	4	73	1.337	15	0.782				
	5	73	1.642	16	0.702				
	6	73	0.467	20	0.286				
	7	73	0.328	23	0.262				
	8	73	0.685	24	0.179				
	9	73	0.132	21	0.121				
	10	73	0.118	18	0.088				
	11	73	1.708	21	0.648				
	12	73	1.940	19	0.317				
	1	74	4.559	18	1.308				
	2	74	1.693	8	1.362	22	1.928		
	3	74	1.538	8	0.648	22	5.465		
4707C1	4	73	1.011	15	0.592				
	5	73	1.240	16	0.532				
	6	73	0.354	20	0.217				
	7	73	0.249	23	0.198				
	8	73	0.518	24	0.147				
	9	73	0.099	21	0.092				
	10	73	0.089	18	0.067				
	11	73	1.291	21	0.490				
	12	73	1.470	19	0.240				
	1	74	3.455	18	0.991				
	2	74	1.280	8	1.031	22	1.458		
	3	74	1.164	8	0.490	22	4.134		
4707D1	4	73	3.115	14	2.226				
	5	73	3.851	16	1.648				
	6	73	1.099	20	0.671				
	7	73	0.770	23	0.614				
	8	73	1.603	24	0.419				
	9	73	0.309	21	0.283				
	10	73	0.276	18	0.206				
	11	73	3.993	21	1.518				
	12	73	4.559	19	0.742				
	1	74	10.675	18	3.058				
	2	74	3.964	8	3.200	22	4.531		
	3	74	3.596	8	1.518	22	12.799		
4707E1	4	73	0.309	15	0.600				
	5	73	1.416	16	0.541				
	6	73	0.362	20	0.286				
	7	73	0.213	23	0.189				
	8	73	0.394	24	0.124				
	9	73	0.105	21	0.096				
	10	73	0.096	18	0.060				
	11	73	1.065	21	0.541				
	12	73	1.385	19	0.207				
	1	74	3.115	18	0.850				
	2	74	1.325	8	1.022	22	1.699		
	3	74	1.634	8	0.691	22	3.964		

TRIBUTARY FLOW INFORMATION FOR TENNESSEE 09/13/76

LAKE CODE 4707 CHEROKEE RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4707F1	4	73	0.750	15	0.391				
	5	73	0.920	16	0.351				
	6	73	0.235	20	0.186				
	7	73	0.138	23	0.123				
	8	73	0.256	24	0.081				
	9	73	0.068	21	0.063				
	10	73	0.063	18	0.039				
	11	73	0.691	21	0.351				
	12	73	0.898	19	0.134				
	1	74	2.022	18	0.552				
	2	74	0.861	18	0.851	22	1.102		
	3	74	1.059	8	0.450	22	2.571		
4707G1	4	73	1.121	15	0.580				
	5	73	1.373	16	0.524				
	6	73	0.351	20	0.278				
	7	73	0.206	23	0.183				
	8	73	0.382	24	0.121				
	9	73	0.102	21	0.093				
	10	73	0.093	18	0.058				
	11	73	1.031	21	0.524				
	12	73	1.342	19	0.200				
	1	74	3.030	18	0.821				
	2	74	1.283	18	1.283	22	1.645		
	3	74	1.583	8	0.671	22	3.823		
4707H1	4	73	1.314	15	0.682				
	5	73	1.608	16	0.614				
	6	73	0.411	20	0.326				
	7	73	0.242	23	0.203				
	8	73	0.447	24	0.141				
	9	73	0.119	21	0.109				
	10	73	0.109	18	0.068				
	11	73	1.209	21	0.614				
	12	73	1.574	19	0.235				
	1	74	3.540	18	0.966				
	2	74	1.506	18	1.506	22	1.928		
	3	74	1.855	8	0.787	22	4.502		
4707Z2	4	73	15.263						
	5	73	18.689						
	6	73	4.786						
	7	73	2.803						
	8	73	5.210						
	9	73	1.385						
	10	73	1.271						
	11	73	14.045						
	12	73	18.264						
	1	74	41.059						
	2	74	17.471						
	3	74	21.549						

APPENDIX C

PHYSICAL AND CHEMICAL DATA

STORET RETRIEVAL DATE 76/09/10

470701
36 09 57.0 083 29 45.0 3
CHEROKEE LAKE
47057 TENNESSEE

11EPALES 2111202
0130 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/24	10 25	0000	18.4		56	290	8.40	99	0.060	0.800	0.750	0.006
	10 25	0004	18.4	8.0		270	8.30	98	0.080	0.500	0.700	0.005
	10 25	0015	18.1	7.6		270	8.00	97	0.090	0.500	0.790	0.005
	10 25	0030	17.2	6.4		270	7.80	97	0.060	0.600	1.040	0.009
	10 25	0050	14.7	6.4		280	7.70	99	0.060	0.200	1.090	0.008
	10 25	0100	12.7	5.8		285	7.60	98	0.050	0.200	1.280	0.034
	10 25	0125	12.1	4.6		285	7.50	98	0.040	0.200	1.280	0.035
73/08/23	13 45	0000	27.5	7.8	66	238	8.90	75	0.070	0.500	0.190	0.006
	13 45	0015	26.8			235						
	13 45	0030	26.7	7.2		235	8.40	72	0.070	0.300	0.180	0.010
	13 45	0050	25.1			272						
	13 45	0060	24.3	0.1		270	7.60	97	0.280	0.600	0.150	0.013
	13 45	0075	23.1			263						
	13 45	0090	21.5	0.1		255	7.50	101	0.340	0.700	0.090	0.026
	13 45	0120	17.8			233						
	13 45	0132	16.2	0.0		236	7.30	114	1.400	1.900	0.090	0.110
73/10/27	12 44	0000	21.9		56	233	7.50	79	0.050	0.400	0.420	0.018
	12 44	0005	21.8	4.4		233	7.50	77	0.050	0.300	0.410	0.024
	12 44	0015	21.8	4.4		232	7.50	79	0.050	0.300	0.420	0.019
	12 44	0050	21.7	4.4		233	7.50	80	0.060	0.300	0.410	0.019
	12 44	0090	21.5	1.0		250	7.30	83	0.110	0.500	0.510	0.023
	12 44	0111	21.2	0.8		250	7.30	95	0.540	1.000	0.220	0.023

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/24	10 25	0000	0.035	5.5
	10 25	0004	0.025	
	10 25	0015	0.025	
	10 25	0030	0.021	
	10 25	0050	0.020	
	10 25	0100	0.043	
	10 25	0125	0.053	
73/08/23	13 45	0000	0.013	11.4
	13 45	0030	0.018	
	13 45	0060	0.024	
	13 45	0090	0.034	
	13 45	0132	0.237	
73/10/27	12 44	0000	0.026	2.1
	12 44	0005	0.025	
	12 44	0015	0.024	
	12 44	0050	0.023	
	12 44	0090	0.039	
	12 44	0111	0.063	

STORET RETRIEVAL DATE 76/09/10

470702
36 12 40.0 083 25 52.0 3
CHEROKEE LAKE
47057 TENNESSEE

11EPALES 2111202
0125 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	03094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/24	11 25	0000	20.9		50	265	9.00	87	0.060	0.800	0.630	0.014
	11 25	0004	20.4	11.2		260	9.00	87	0.040	0.700	0.650	0.016
	11 25	0015	19.5	9.0		260	8.60	86	0.050	0.500	0.690	0.006
	11 25	0025	17.6	6.0		270	8.00	86	0.140	0.600	0.770	0.007
	11 25	0075	13.1	4.8		270	7.80	85	0.040	0.400		0.035
	11 25	0115	12.4	4.6		285	7.60	92	0.030	0.300	1.290	0.040
73/08/23	14 30	0000	27.5	7.0	70	237	8.90	75	0.110	0.800	0.180	0.013
	14 30	0015	26.4			240						
	14 30	0040	26.4	5.8		244	8.80	75	0.120	0.600	0.190	0.024
	14 30	0060	24.4			275						
	14 30	0080	21.9	0.1		260	7.40	98	0.480	1.000	0.220	0.040
	14 30	0100	19.1			242						
	14 30	0123	17.5	0.1		250	7.30	118	1.490	2.300	0.080	0.117
73/10/27	13 16	0000	21.8		60	231	7.80	79	0.040	0.600	0.400	0.014
	13 16	0005	21.7	6.0		230	7.70	82	0.050	0.300	0.410	0.012
	13 16	0015	21.7	5.6		230	7.60	82	0.040	0.400	0.410	0.012
	13 16	0030	21.6	5.6		231	7.60	83	0.030	0.300	0.420	0.013
	13 16	0070	21.1	3.6		243	7.45	87	0.080	0.400	0.580	0.021
	13 16	0100	20.8	2.0		251	7.30	88	0.220	0.600	0.560	0.026

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/24	11 25	0000	0.059	15.6
	11 25	0004	0.051	
	11 25	0015	0.029	
	11 25	0025	0.028	
	11 25	0075	0.051	
	11 25	0115	0.057	
73/08/23	14 30	0000	0.017	12.1
	14 30	0040	0.030	
	14 30	0060	0.053	
	14 30	0123	0.226	
73/10/27	13 16	0000	0.034	7.3
	13 16	0005	0.031	
	13 16	0015	0.028	
	13 16	0030	0.025	
	13 16	0070	0.043	
	13 16	0100	0.070	

STORET RETRIEVAL DATE 76/09/10

470703
36 16 22.0 083 21 47.0 3
CHEROKEE LAKE
47057 TENNESSEE
040292

11EPALES 2111202
0065 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/24	12 10	0000	20.5		58	275	8.70	92	0.080	0.500	0.640	0.005
	12 10	0004	20.2	7.6		275	8.60	92	0.080	0.400	0.630	0.004
	12 10	0015	20.1	7.5		265	8.70	92	0.080	0.500	0.640	0.005
	12 10	0030	19.4	6.1		265	8.00	94	0.240	0.500	0.740	0.015
	12 10	0040	16.2	4.2		275	7.80	95	0.270	0.500	0.780	0.021
	12 10	0060	13.7	4.1		285	7.70	98	0.140	0.400	1.100	0.035
73/08/23	15 05	0000	26.8	6.8	45	247	8.70	76	0.100	0.800	0.240	0.010
	15 05	0015	26.4			249						
	15 05	0030	26.2	3.8		253	7.90	78	0.120	0.600	0.300	0.019
	15 05	0045	24.8			272						
	15 05	0060	23.8	0.1		265	7.30	93	0.380	0.900	0.560	0.041
	15 05	0075	22.4			255						
	15 05	0090	19.7	0.1		242	7.30	107	0.980	1.500	0.120	0.079
	15 05	0113	16.9	0.0		251	7.30	123	1.940	2.700	0.120	0.152
73/10/26	13 53	0000	21.3		60	244	7.80	84	0.040	0.600	0.590	0.018
	13 53	0005	21.1	6.8		244	7.70	83	0.040	0.500	0.680	0.017
	13 53	0015	21.1	5.8		246	7.60	84	0.040	0.600	0.640	0.017
	13 53	0030	21.0	4.6		246	7.50	86	0.050	0.500	0.680	0.023
	13 53	0060	20.9	4.4		252	7.50	86	0.060	0.400	0.700	0.025
	13 53	0088	20.5	3.4		258	7.40	89	0.180	0.600	0.650	0.029

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/24	12 10	0000	0.037	7.8
	12 10	0004	0.043	
	12 10	0015	0.037	
	12 10	0030	0.036	
	12 10	0040	0.045	
	12 10	0060	0.050	
73/08/23	15 05	0000	0.018	13.8
	15 05	0030	0.028	
	15 05	0060	0.059	
	15 05	0090	0.117	
	15 05	0113	0.322	
73/10/26	13 53	0000	0.073	4.6
	13 53	0005	0.047	
	13 53	0015	0.037	
	13 53	0030	0.041	
	13 53	0060	0.038	
	13 53	0088	0.079	

STORET RETRIEVAL DATE 76/09/10

470704
36 19 22.0 083 22 02.0 3
CHEROKEE LAKE
47057 TENNESSEE

040292

11EPALES 2111202
0052 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/25	09 25	0000	20.9		51	290	8.60	91	0.110	0.700	0.620	0.005
	09 25	0004	20.9	9.3		280	8.60	92	0.080	0.600	0.600	0.004
	09 25	0015	20.0	8.0		270	8.30	92	0.170	0.700	0.600	0.008
	09 25	0025	18.7	6.8		260	7.90	92	0.180	0.600	0.580	0.008
	09 25	0050	15.8	3.6		260	7.70	96	0.220	0.400	0.680	0.008
73/08/23	17 10	0000	27.2	6.8	50	232	8.50	76	0.070	0.700	0.060	0.021
	17 10	0005	26.4			231						
	17 10	0015	26.2	5.8		231	8.20	78	0.060	0.300	0.050	0.014
	17 10	0024	26.2			231						
	17 10	0033	25.8	4.4		232	8.40	78	0.090	0.400	0.060	0.015
73/10/27	15 47	0000	20.6		42	246	8.50	82	0.050	0.800	0.560	0.022
	15 47	0005	20.4	9.0		246	8.50	83	0.040	0.600	0.550	0.019
	15 47	0015	19.9	7.6		245	8.20	81	0.060	0.400	0.530	0.017
	15 47	0020	19.9	7.6		244	8.20	82	0.060	0.400	0.550	0.017

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/25	09 25	0000	0.038	5.0
	09 25	0004	0.038	
	09 25	0015	0.033	
	09 25	0025	0.025	
	09 25	0050	0.032	
73/08/23	17 10	0000	0.024	9.9
	17 10	0015	0.022	
	17 10	0033	0.029	
73/10/27	15 47	0000	0.061	13.2
	15 47	0005	0.055	
	15 47	0015	0.035	
	15 47	0020	0.031	

STORET RETRIEVAL DATE 76/09/10

470705
36 15 42.0 083 17 00.0 3
CHEROKEE LAKE
47057 TENNESSEE
040292

11EPALES 2111202
0096 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/24	16 00	0000	21.5		40	265	8.90	85	0.040	0.700	0.570	0.014
	16 00	0004	21.2	11.0		265	8.90	88	0.030	0.600	0.580	0.021
	16 00	0015	20.2	8.8		270	8.30	87	0.070	0.500	0.610	0.010
	16 00	0025	18.6	6.4		280	7.60	90	0.210	0.600	0.670	0.024
	16 00	0050	16.2	4.8		280	7.60	94	0.330	0.700	0.770	0.047
	16 00	0070	13.1	3.0		290	7.60	101	0.530	1.000	0.900	0.137
	16 00	0095	12.6	2.0		290	7.50	102	0.560	1.000	0.820	0.127
73/08/23	16 30	0000	28.6	9.0	50	266	9.00	75	0.080	0.800	0.370	0.018
	16 30	0015	26.7	6.6		259	8.30	74	0.080	0.400	0.390	0.032
	16 30	0030	25.7	0.2		284	7.40	90	0.260	0.600	0.780	0.057
	16 30	0045	24.6			278						
	16 30	0060	23.3	0.2		266	7.30	94	0.470	0.800	0.790	0.151
	16 30	0082	20.1	0.1		288	7.30	119	2.110	3.100	0.110	0.319
73/10/27	14 20	0000	21.5		39	283	8.20	89	0.050	0.700	0.870	0.025
	14 20	0005	21.2	6.6		284	8.00	90	0.040	0.600	0.910	0.026
	14 20	0015	20.7	5.6		280	7.70	89	0.060	0.500	0.920	0.028
	14 20	0030	20.6	5.2		281	7.60	86	0.090	0.600	0.920	0.038
	14 20	0061	20.0	4.4		285	7.50	87	0.310	0.800	0.780	0.045

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/24	16 00	0000	0.036	18.2
	16 00	0004	0.047	
	16 00	0015	0.036	
	16 00	0025	0.040	
	16 00	0050	0.060	
	16 00	0070	0.172	
	16 00	0095	0.152	
73/08/23	16 30	0000	0.036	16.9
	16 30	0015	0.047	
	16 30	0030	0.084	
	16 30	0060	0.164	
	16 30	0082	0.477	
73/10/27	14 20	0000	0.123	8.3
	14 20	0005	0.065	
	14 20	0015	0.060	
	14 20	0030	0.057	
	14 20	0061	0.078	

STORET RETRIEVAL DATE 76/09/10

470706
36 19 18.0 083 11 47.0 3
CHEROKEE LAKE
47073 TENNESSEE

040292

11EPALES 2111202
0065 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO26NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/24	15 20	0000	21.6		54	260	8.90	96	0.050	0.600	0.530	0.010
	15 20	0004	21.6	11.8		260	8.90	107	0.030	0.400	0.530	0.012
	15 20	0015	19.2	7.8		275	8.00	112	0.150	0.400	0.660	0.011
	15 20	0025	18.8	7.0		275	7.80	113	0.210	0.500	0.680	0.034
	15 20	0050	16.8	3.4		260	7.70	110	0.420	0.700	0.580	0.037
	15 20	0063	13.2	2.4		300	7.60	127	0.660	1.000	0.710	0.065
73/08/24	09 50	0000	26.5	6.4	60	288	8.00	82	0.120	0.800	0.640	0.014
	09 50	0015	26.4	6.0		289	7.90	82	0.120	0.400	0.650	0.022
	09 50	0030	25.9	2.8		293	7.60	88	0.280	0.600	0.830	0.042
	09 50	0040	24.9			274						
	09 50	0045	24.6	2.6		265	7.70	92	0.400	0.800	0.760	0.055
	09 50	0059	23.6	1.4		257	7.00	95	0.560	0.900	0.720	0.052
73/10/27	15 25	0000	20.0		36	295	8.80	84	0.100	1.400	0.820	0.052
	15 25	0005	19.8	8.6		294	8.40	85	0.120	0.900	0.830	0.056
	15 25	0015	19.7	8.2		300	8.20	85	0.110	0.800	0.870	0.059
	15 25	0031	19.7	7.8		302	8.10	86	0.120	0.800	0.880	0.059

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/24	15 20	0000	0.054	17.3
	15 20	0004	0.055	
	15 20	0015	0.051	
	15 20	0025	0.053	
	15 20	0050	0.061	
	15 20	0063	0.090	
73/08/24	09 50	0000	0.050	14.7
	09 50	0015	0.055	
	09 50	0030	0.063	
	09 50	0045	0.103	
	09 50	0059	0.103	
73/10/27	15 25	0000	0.147	24.3
	15 25	0005	0.138	
	15 25	0015	0.128	
	15 25	0031	0.133	

STORET RETRIEVAL DATE 76/09/10

470707
36 21 40.0 083 07 32.0 3
CHEROKEE LAKE
47073 TENNESSEE

040292

11EPALES 2111202
0050 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/24	14 40	0000	21.8									
	14 40	0004	21.6	8.6	39	280	8.80	95	0.080	0.800	0.650	0.014
	14 40	0015	20.8	8.0		285	8.80	94	0.100	0.800	0.650	0.010
	14 40	0025	19.9	6.8		285	8.10	95	0.180	0.600	0.700	0.012
	14 40	0045	17.9	4.6		285	7.90	97	0.260	0.700	0.740	0.026
73/08/24	10 25	0000	26.0	8.0	48	280	7.70	102	0.460	0.800	0.670	0.037
	10 25	0015	25.9	7.4		279	8.00	88	0.130	0.900	0.800	0.033
	10 25	0024	25.2	7.2		303	7.90	88	0.160	0.500	0.790	0.042
	10 25	0028	25.1			301	7.90	90	0.320	0.700	0.820	0.066
	10 25	0038	24.5	4.6		282						
73/10/27	14 55	0000	21.0		48	295	7.80	91	0.370	0.800	0.830	0.067
	14 55	0005	20.9	7.4		292	8.30	95	0.110	0.700	0.840	0.040
	14 55	0015	19.9	6.6		291	7.90	93	0.130	0.500	0.840	0.041
	14 55	0032	19.8	6.8		292	7.80	91	0.140	0.400	0.820	0.039
							7.80	90	0.130	0.400	0.810	0.040

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/24	14 40	0000	0.098	20.1
	14 40	0004	0.114	
	14 40	0015	0.067	
	14 40	0025	0.072	
	14 40	0045	0.101	
73/08/24	10 25	0000	0.097	16.4
	10 25	0015	0.093	
	10 25	0024	0.113	
	10 25	0038	0.132	
73/10/27	14 55	0000	0.089	10.9
	14 55	0005	0.077	
	14 55	0015	0.075	
	14 55	0032	0.067	

APPENDIX D

TRIBUTARY AND WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 76/09/09

4707A1
36 22 45.0 082 58 00.0 4
HOLSTON RIVER
47 HAWKINS CO NAP
I/CHEROKEE RES 040291
OUTLET OF DAM JUST N OF MCCLOUD
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	14 20		0.740	0.780	0.260	0.032	0.090
73/05/16	14 15		0.670	1.100	0.231	0.056	0.150
73/06/20	14 05		0.770	0.840	0.198	0.052	0.110
73/07/23	14 00		0.850	1.470	0.570	0.050	0.135
73/08/24	12 45		0.800	1.000	0.176	0.030	0.110
73/09/21	12 40		0.750	1.050	0.410	0.110	0.210
73/10/18	12 30		0.930	0.800	0.036	0.062	0.165
73/11/21	12 45		0.980	0.650	0.168	0.060	0.090
73/12/19	15 00		0.756	1.500	0.200	0.036	0.065
74/01/18	13 40		0.870	0.400	0.088	0.028	0.075
74/02/08	12 45		0.810	0.800	0.180	0.025	0.105
74/02/22	12 45		0.800	0.800	0.190	0.045	0.120
74/03/08	12 50		0.820	1.400	0.410	0.035	0.085

STORET RETRIEVAL DATE 76/09/09

4707A2
36 10 07.0 083 30 15.0 4
HOLSTON RIVER
47 7.5 JOPPA
T/CHEROKEE RES 100691
HWY 92 BRDG JUST BELO CHEROKEE DAM
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	09	54	0.850	0.600	0.138	0.015	0.040
73/05/16	09	25	1.000	1.100	0.130	0.032	0.050
73/06/20	09	00	1.160	2.500	0.210	0.064	0.070
73/07/23	09	30	0.750	1.900	1.160	0.021	0.035
73/08/24	09	00	0.105	0.840	0.460	0.020	0.040
73/09/21	09	00	0.310	0.840	0.520	0.037	0.075
73/10/18	09	20	0.357	0.350	0.031	0.013	0.020
73/11/21	09	15	0.710	0.400	0.044	0.020	0.035
73/12/19	09	25	0.820	0.100K	0.052	0.028	0.040
74/01/18	09	30	0.830	0.500	0.168	0.036	0.065
74/02/08	09	00	0.850	0.400	0.100	0.025	0.035
74/02/22	09	15	0.924	0.400	0.115	0.030	0.035
74/03/08	09	00	0.880	3.300	0.210	0.030	0.055

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

470781
36 23 40.0 083 04 05.0 4
CANEY CREEK
47 HAWKINS CO MAP
T/CHEROKEE RES 040292
RD BRDG 1 MI N OF HWY 1
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	12 45		0.440	0.240	0.031	0.005K	0.015
73/05/16	12 45		0.610	0.430	0.021	0.012	0.025
73/06/20	11 45		0.670	0.880	0.075	0.015	0.035
73/07/23	12 15		0.700	0.580	0.027	0.029	0.140
73/08/24	11 50		0.590	0.280	0.097	0.013	0.030
73/09/21	11 35		0.350	0.270	0.040	0.027	0.050
73/10/18	11 40		0.069	0.600	0.018	0.011	0.020
73/11/21	12 00		0.072	0.350	0.012	0.032	0.070
73/12/19	12 20		0.830	0.900	0.032	0.005	0.012
74/01/18	12 50		0.890	0.300	0.028	0.016	0.025
74/02/08	11 45		0.770	0.400	0.015	0.010	0.040
74/02/22	11 45		0.400	1.900	0.130	0.027	
74/03/08	11 50		0.480	0.500	0.050	0.010	0.035

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4707C1
36 23 22.0 083 07 07.0 4
UNNAMED CREEK
47 HAWKINS CO MAP
T/CHEROKEE RES 040292
UNDRY RD BRDG .5 MI NW OF US HWY 11W
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	12 30		0.082	0.150	0.005K	0.005K	0.015
73/05/16	13 00		0.189	0.150	0.010	0.013	0.030
73/06/20	11 30		0.273	2.800	0.091	0.031	0.050
73/07/23	12 00		0.189	0.220	0.023	0.026	0.065
73/08/24	11 40		0.075	0.690	0.190	0.030	0.050
73/09/21	11 20		0.092	0.290	0.021	0.044	0.063
73/10/18	11 25		0.010K	0.350	0.016	0.048	0.075
73/11/21	11 50		0.520	5.500	0.060	0.208	
73/12/19	12 00		0.540	1.250	0.100	0.028	0.035
74/01/18	12 30		0.520	0.300	0.016	0.020	0.042
74/02/08	11 30		0.520	0.400	0.025	0.015	0.045
74/02/22	11 30		0.560	0.600	0.045	0.035	0.140
74/03/08	11 30		0.350	1.100	0.025	0.025	0.070

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4707D1
36 23 30.0 083 13 00.0 4
POOR VALLEY CREEK
47 7.5 RUSSELVILLE
T/CHEROKEE RES 040192
HWY 31 BRDG 4 MI N MOORESBURG
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/05/16	12	15	0.076	0.210	0.009	0.006	0.010
73/06/20	11	15	0.210	2.730	0.126	0.017	0.045
73/07/23	11	45	0.330	1.900	0.126		
73/08/24	11	15	0.054	1.000	0.095	0.008	0.020
73/09/21	11	00	0.126	0.365	0.031	0.009	0.030
73/10/18	11	05	0.017	0.450	0.038	0.011	0.011
73/11/21	11	26	0.036	0.400	0.044	0.008	0.020
73/12/19	11	30	0.270	2.200	0.420	0.016	0.020
74/01/18	12	05	0.208	0.100K	0.008	0.005K	0.010
74/02/08	11	15	0.192	0.300	0.030	0.005K	0.005
74/02/22	11	15	0.184	0.700	0.045	0.020	
74/03/08	11	10	0.104	0.200	0.015	0.010	0.030

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4707E1
36 14 46.0 083 17 32.0 4
TURKEY CREEK
47 7.5 MORRISTOWN
T/CHEROKEE RES 040292
BRDG JUST N MOORESTOWN 1000 FT UPSTREAM
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	11	05	2.000	0.240	0.009	0.046	0.075
73/05/16	11	18	1.920	0.730	0.037	0.060	0.105
73/06/20	10	35	1.740	2.100	0.072	0.100	0.120
73/07/23	11	04	1.700	0.750	0.310	0.231	0.315
73/08/24	10	35	1.300	0.880	0.065	0.138	0.240
73/09/21	10	15	1.140	0.840	0.255	0.290	0.390
73/10/18	10	30	0.910	0.300	0.010	0.270	0.330
73/11/21	10	45	0.010K		0.012	0.005K	
73/12/19	11	00	1.760	0.500	0.036	0.088	0.135
74/01/18	11	30	2.100	0.900	0.108	0.096	0.240
74/02/08	10	30	2.200	0.800	0.045		0.280
74/02/22	10	35	1.180	1.500	0.080	0.075	0.300
74/03/08	10	30	1.800	0.600	0.015	0.100	0.185

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4707F1
36 15 09.0 083 16 29.0 4
SPRING CREEK
47 7.5 BEAN STATION
T/CHEROKEE RES 040292
BRDG UPSTREAM OF MOUTH OF SPRING CREEK
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	11 32		1.440	0.370	0.006	0.020	
73/05/16	11 50		1.700	1.470	0.065	0.033	0.045
73/06/20	10 45		1.800	2.200	0.220	0.360	0.400
73/07/23	11 15		1.860	0.660	0.063	0.154	0.190
73/08/24	10 45		1.560	0.880	0.231	0.024	0.030
73/09/21	10 30		1.600	0.180	0.028	0.022	0.030
73/10/18	10 40		1.460	0.100K	0.022	0.014	0.014
73/11/21	11 00		0.670	6.900			
73/12/19	11 03		1.840	0.100	0.048	0.024	0.035
74/01/18	11 35		2.000	0.100	0.005K	0.016	0.035
74/02/18	10 45		1.760	0.400	0.020	0.015	0.040
74/02/22	10 45		1.100	1.500	0.030	0.030	
74/03/08	10 40		1.500	2.100	0.050	0.015	0.035

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

470761
36 21 30.0 083 02 10.0 4
ROBERTSON CREEK
47 HAWKINS CO MAP
T/CHEROKEE RES 040272
BRDG ON S SIDE OF LK 1.5 MI WSW HWY 66
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	14 45		0.760	0.170	0.005K	0.005K	0.015
73/05/16	14 45		1.020	0.720	0.025	0.009	0.015
73/06/20	14 25		1.380	0.440	0.054	0.012	0.034
73/07/23	13 25		1.440	0.960	0.480	0.021	0.040
73/08/24	12 10		1.200	0.260	0.050	0.012	0.023
73/09/21	11 55		1.120	0.250	0.020	0.013	0.020
73/10/18	12 00		0.950	0.300	0.016	0.009	0.010
73/11/21	12 15		0.384	0.350	0.016	0.012	0.090
73/12/19	14 20		0.800	0.600	0.024	0.012	0.020
74/01/18	14 05		1.060	0.400	0.012	0.012	0.030
74/02/18	12 15		0.950	0.900	0.040	0.015	0.025
74/02/22	12 15		0.312	1.600	0.050	0.035	
74/03/08	12 15		0.690	1.100	0.025	0.020	0.050

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4707M1
36 21 45.0 082 59 20.0 4
LOUDERBAK CREEK
47 HAWKINS CO MAP
T/CHEROKEE RES 040392
SEC RD BRDG JUST W OF MCCLOUD
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/15	13 55		0.031	0.180	0.005K	0.005K	0.010
73/05/16	14 05		0.039	3.000	0.054	0.009	0.100
73/06/20	13 45		0.160	2.310	0.021	0.032	0.270
73/07/23	13 40		0.189	1.150	0.065	0.016	0.110
73/08/24	12 25		0.093	1.260	0.130	0.024	0.045
73/09/21	12 05		0.132	0.520	0.037	0.014	0.045
73/10/18	12 15		0.039	0.350	0.015	0.008	0.025
73/11/21	12 30		0.076	0.400	0.012	0.044	0.125
73/12/19	14 40		0.132	2.100	0.507	0.012	0.025
74/01/18	13 15		0.300	0.400	0.008	0.012	0.015
74/02/18	12 30		0.340	0.800	0.035	0.010	0.025
74/02/22	12 30		0.208	1.100	0.040	0.035	
74/03/08	12 30		0.116	1.000	0.030	0.015	0.032

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/09

4707AA TF4707AA P0051240
36 14 55.0 083 17 20.0 4
MORRISTOWN
47 7.5 MORRISTOWN
T/CHEROKEE LAKE 040292
TURKEY CREEK/HOLSTON RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/06	08 00								
CP(T)-									
73/06/06	22 00		0.210	24.000	3.620	3.660	6.700	1.850	1.760
73/07/12	07 00								
CP(T)-									
73/07/12	22 00		0.050	29.000	5.300	6.400	9.200	1.900	1.800
73/08/09	07 00								
CP(T)-									
73/08/09	22 00		0.130	24.000	4.600	5.400	8.350	1.950	1.900
73/09/07	07 00								
CP(T)-									
73/09/07	22 00		0.046	28.000	7.200	7.600	10.000	1.770	1.700
73/10/02	07 00								
CP(T)-									
73/10/02	22 00		0.250	14.000	8.000	6.400	8.900	2.950	2.300
73/11/06	07 00								
CP(T)-									
73/11/06	22 00		0.390	27.000	8.400	6.600	9.450	2.600	1.800
73/12/03	07 00								
CP(T)-									
73/12/03	21 00		0.580	27.000	4.100	4.500	9.400	3.300	2.600
74/01/15	08 00								
CP(T)-									
74/01/15	23 00		2.080	12.000		2.320	4.400	5.000	4.500
74/02/04	08 00								
CP(T)-									
74/02/04	23 00		1.280	9.000		2.080	5.100	5.000	4.800
64/03/11	08 00								
CP(T)-									
74/02/28	22 00		0.040	25.000			8.600	2.300	2.300
74/04/09	08 00								
CP(T)-									
74/04/09	22 00		1.040	11.000		2.100	4.900	2.000	1.900
74/05/06	08 00								
CP(T)-									
74/05/06	22 00		0.280	23.000	4.700	4.300	7.900	2.200	1.900

STORET RETRIEVAL DATE 76/09/09

4707AA TF4707AA P0051240
36 14 55.0 083 17 20.0 4
MORRISTOWN
47 7.5 MORRISTOWN
T/CHEROKEE LAKE 040292
TURKEY CREEK/HOLSTON RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/06/19	08 00		0.120	26.000	4.600	4.800	7.600	1.700	1.850
CP(T)-									
74/06/19	22 00								

STORET RETRIEVAL DATE 76/09/09

4707XA NO4707XA P002140
36 38 10.0 082 34 55.0 4
GATE CITY
47 7.5 GATE CITY
T/CHEROKEE RESERVOIR 040192
UNNAMED TRIB/BIG MOCCASIN CR/HOLSTON RIV
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/10/29	11 00								
CP(T)-			0.120	17.000	2.000	6.600	9.300	0.182	0.185
73/10/29	16 00								
73/11/28	11 00								
CP(T)-			1.260	7.200		2.700	4.100	0.205	0.199
73/11/28	16 00								
73/12/28	11 00								
CP(T)-			1.680	13.500		2.400	2.400	0.224	0.215
73/12/28	16 00								
74/01/28	11 00								
CP(T)-			2.160	10.000		4.100	7.200	0.340	0.301
74/01/28	16 00								
74/02/27	11 00								
CP(T)-			1.840	14.000	1.980	5.250	7.750	0.216	0.241
74/02/27	16 00								
74/03/27	11 00								
CP(T)-			1.040	14.500	1.800	5.000	7.100	0.221	0.247
74/03/27	16 00								
74/04/26	11 00								
CP(T)-			0.960	17.000	2.650	7.300	9.200	0.194	0.244
74/04/26	16 00								
74/05/28	11 00								
CP(T)-			0.080	21.000	3.700	6.800	9.900	0.232	0.271
74/05/28	16 00								
74/06/26	11 00								
CP(T)-			0.440	20.000	5.400	7.200	9.450	0.184	0.206
74/06/26	16 00								
74/07/26	11 00								
CP(T)-			0.240	17.000	2.000	4.900	7.300	0.249	0.198
74/07/26	16 00								
74/08/26	11 00								
CP(T)-			0.480	19.000	4.700	8.800	13.000	0.180	0.202
74/08/26	16 00								
74/09/27	11 00								
CP(T)-			0.200	23.000	6.600	7.400	9.450	0.179	0.194
74/09/27	16 00								

STORET RETRIEVAL DATE 76/09/09

4707XA NO4707XA P002140
36 38 10.0 082 34 55.0 4
GATE CITY
47 7.5 GATE CITY
T/CHEROKEE RESERVOIR 040192
UNNAMED TRIB/BIG MOCCASIN CR/HOLSTON RIV
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/10/28 CP(T)-	10 00								
74/10/28	16 00		0.080	26.000	8.225	7.370	11.000L	0.177	0.189

L ACTUAL VALUE IS KNOWN TO BE
GREATER THAN VALUE GIVEN

STORET RETRIEVAL DATE 76/09/09

470721 TF470721 P007000
36 07 45.0 083 30 13.0 4
JEFFERSON CITY
47 7.5 JOPPA
D/CHEROKEE LAKE 100691
MOSSY CREEK EMBAYMENT OF CHEROKEE LAKE
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/31	08 00		0.496	10.500	0.251	5.880	7.700	0.664	0.400
CP(T)-									
73/06/01	08 00								
73/06/29	08 00		0.155	12.600	1.260	11.000	11.500	0.380	0.400
CP(T)-									
73/06/29	15 00								
73/07/27	08 00		0.400	8.900	0.140	7.900	10.500	0.450	0.460
CP(T)-									
73/07/27	16 00			10.500			14.000	0.600	0.500
73/08/31	13 00		0.860	16.500	0.100	1.950	10.500	0.600	0.500
73/10/01	11 00		0.600	15.000	2.300	7.800	14.500	0.500	0.500
73/11/01	13 00		0.120	16.000	3.570	7.800	9.200	0.600	0.600
73/12/01	13 00		1.240	9.900	0.170	4.600	6.500	0.600	0.600
73/12/31	13 00		0.820	9.900	1.160	4.000	6.200	0.600	0.700
74/01/31	13 00		0.200	13.000	1.750	6.100	7.500	0.600	0.600
74/02/28	13 00		1.160	8.250	0.100	3.400	5.100	0.600	0.600
74/03/31	13 00		0.560	10.000	1.350	8.300	9.600	0.600	0.600
74/04/30	13 00		2.000	6.300	0.058	6.800	8.000	0.700	0.600
74/05/31	13 00								

APPENDIX E

PARAMETRIC RANKINGS OF LAKES SAMPLED BY NES IN 1974

STATE OF TENNESSEE

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P
4701	LAKE BARKLEY	0.128	0.480	473.381	12.723	10.400	0.047
4704	BOONE RESERVOIR	0.052	0.995	442.871	11.415	14.600	0.029
4705	CHEATHAM RESERVOIR	0.142	0.460	473.800	8.160	9.600	0.084
4707	CHEROKEE LAKE	0.051	0.780	448.667	12.162	15.000	0.022
4708	CHICKAMAUGA LAKE	0.031	0.440	463.833	3.111	9.600	0.012
4711	DOUGLAS LAKE	0.026	0.440	442.823	4.553	15.000	0.014
4712	FORT LOUDON RESERVOIR	0.054	0.550	465.571	4.776	12.600	0.025
4713	GREAT FALLS LAKE	0.020	0.405	444.417	3.983	14.800	0.007
4717	NICKAJACK RESERVOIR	0.051	0.495	459.833	2.742	9.700	0.025
4720	OLD HICKORY LAKE	0.058	0.330	469.769	8.931	9.400	0.019
4722	WATTS BAR RESERVOIR	0.032	0.510	462.250	5.550	11.000	0.012
4723	J. PERCY PRIEST RESERVOI	0.056	0.155	430.200	9.993	15.000	0.021
4724	TIM'S FORD RESERVOIR	0.021	0.445	398.167	6.739	14.900	0.009
4725	SOUTH HOLSTON LAKE	0.014	0.570	404.750	7.667	15.000	0.006
4727	REELFOOT LAKE	0.233	0.170	477.917	80.958	13.200	0.059
4728	WOODS RESERVOIR	0.017	0.320	429.083	7.392	15.000	0.005

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
4701	LAKE BARKLEY	13 (2)	40 (6)	13 (2)	7 (1)	73 (11)	13 (2)	159
4704	BOONE RESERVOIR	40 (6)	0 (0)	73 (11)	20 (3)	47 (7)	20 (3)	200
4706	CHEATHAM RESERVOIR	7 (1)	47 (7)	7 (1)	40 (6)	90 (13)	0 (0)	191
4707	CHEROKEE LAKE	50 (7)	7 (1)	53 (8)	13 (2)	13 (0)	40 (6)	176
4708	CHICKAMAUGA LAKE	67 (10)	63 (9)	33 (5)	93 (14)	90 (13)	70 (10)	416
4711	DOUGLAS LAKE	73 (11)	63 (9)	67 (10)	80 (12)	13 (0)	60 (9)	356
4712	FORT LOUDON RESERVOIR	33 (5)	20 (3)	27 (4)	73 (11)	60 (9)	27 (4)	240
4713	GREAT FALLS LAKE	87 (13)	73 (11)	60 (9)	87 (13)	40 (6)	93 (14)	440
4717	NICKAJACK RESERVOIR	50 (7)	33 (5)	47 (7)	100 (15)	80 (12)	33 (5)	343
4720	OLD HICKORY LAKE	20 (3)	80 (12)	20 (3)	33 (5)	100 (15)	53 (8)	306
4722	WATTS BAR RESERVOIR	60 (9)	27 (4)	40 (6)	67 (10)	67 (10)	70 (10)	331
4723	J. PERCY PRIEST RESERVOI	27 (4)	100 (15)	80 (12)	27 (4)	13 (0)	47 (7)	294
4724	TIM'S FORD RESERVOIR	80 (12)	53 (8)	100 (15)	60 (9)	33 (5)	80 (12)	406
4725	SOUTH HOLSTON LAKE	100 (15)	13 (2)	93 (14)	47 (7)	13 (0)	87 (13)	353
4727	REELFOOT LAKE	0 (0)	93 (14)	0 (0)	0 (0)	53 (8)	7 (1)	153
4728	WOODS RESERVOIR	93 (14)	87 (13)	87 (13)	53 (8)	13 (0)	100 (15)	433